University of Strathclyde
Technology & Innovation Centre

Health Technologies

Business Opportunities —

Improved biological stability and mechanical strength of collagen for implantation

Background

Biomedical materials and artificial tissues are being developed to repair, replace and enhance natural tissues. It is essential that these biomaterials maintain strength and stability following implantation. Collagen, the most widely used matrix for tissue engineering, undergoes a constant process of remodelling and reshaping *in vivo*, and the balance of its synthesis and gradual degradation by cells of the body will determine the strength and integrity of implanted scaffolds over time. Thus, there is a clear need for safe and effective methods to slow and control the rate at which collagen implants are degraded *in vivo*.

Technology

Using an *in vitro* model, researchers at the University of Strathclyde have discovered a safe method to slow down the rate at which collagen scaffolds are degraded. Fibroblast-seeded collagen hydrogels treated with existing FDA -approved drugs demonstrated increased stiffness compared to untreated hydrogels, with no significant changes to tissue permeability.

Key Benefits

- Slows collagen degradation, prolonging half life
- Increases matrix stiffness, without affecting permeability
- No toxic effect to resident cells
- Treatment involves existing FDA-approved drugs
- Collagen is treated prior to gelling, so would be injectable
- May also promote tissue vascularisation

Markets and Applications

This technology can be used for any procedure requiring the use of tissue engineered devices containing collagen. It would also be of great interest to the cosmetics industry. By slowing down the rate at which collagen implants degrade they would not have to be re-implanted as regularly to maintain repair or cosmetic effect.

Licencing and Development

A patent application filing is underway and partners are sought for licensing and/or collaborative R&D.